

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: GLENN LAW
FOLEY & LARDNER
3000 K STREET, N.W.
SUITE 500
WASHINGTON DC 20007-5109

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

| | |
|--|---|
| Applicant's or agent's file reference 76521/150 | Date of Mailing (day/month/year) 04 MAR 1998 |
| International application No. PCT/US97/19680 | International filing date (day/month/year) 03 NOVEMBER 1997 |
| Applicant NATIONAL RECOVERY TECHNOLOGIES, INC. | |

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

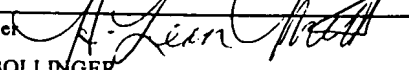
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 *bis* 1 and 90 *bis* 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

| | |
|---|--|
| Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230 | Authorized officer  DAVID H BOLLINGER Telephone No. (703) 308-1113 |
|---|--|

H.L. 19 12 5-4-98

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/19680

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :BO7C 5/00

US CL :209/576

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 209/576, 577, 579, 578, 587, 589, 930, 942, 702, 705

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| A | US 5,339,962 A (Sommer, Jr. et al.) 23 August 1994 | |
| A | US 5,423,431 A (Westin) 13 June 1995 | |
| A | US 5,520,290 A (Kumar et al.) 28 May 1996 | |
| A | US 5,141,110 A (Trischan et al.) 25 August 1992 | |

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

| | | |
|---|-----|--|
| * Special categories of cited documents: | *T | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| *A* document defining the general state of the art which is not considered to be of particular relevance | *X* | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| *E* earlier document published on or after the international filing date | *Y* | document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | *A* | document member of the same patent family |
| *O* document referring to an oral disclosure, use, exhibition or other means | | |
| *P* document published prior to the international filing date but later than the priority date claimed | | |

Date of the actual completion of the international search

05 FEBRUARY 1998

Date of mailing of the international search report

04 MAR 1998

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

DAVID H BOLLINGER

Telephone No. (703) 308-1113

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

| | | | | | | | |
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| AL | Albania | ES | Spain | LS | Lesotho | SI | Slovenia |
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| DK | Denmark | LK | Sri Lanka | SE | Sweden | | |
| EE | Estonia | LR | Liberia | SG | Singapore | | |



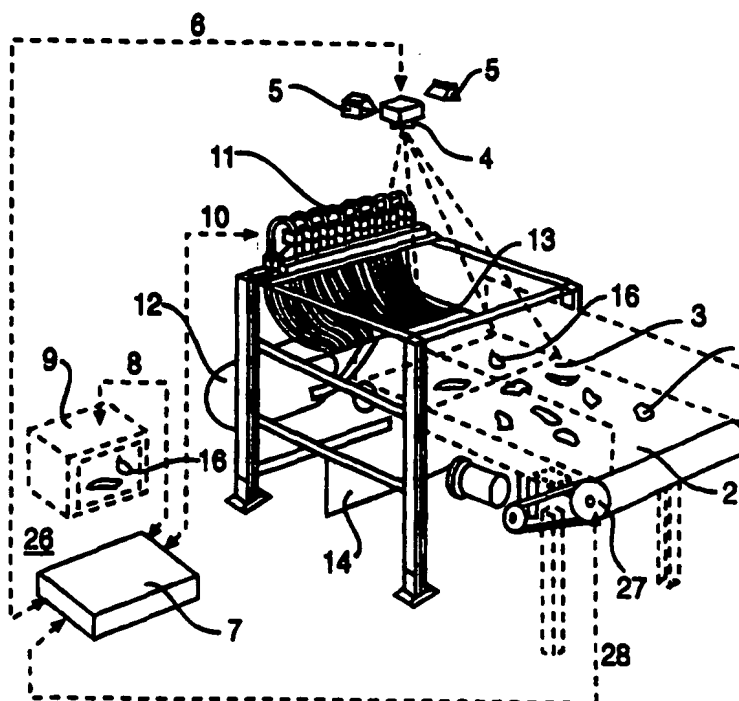
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| | | | |
|--|--|--|--|
| (51) International Patent Classification ⁶ : B07C 5/00 | | A1 | (11) International Publication Number: WO 98/19799 |
| | | | (43) International Publication Date: 14 May 1998 (14.05.98) |
| (21) International Application Number: PCT/US97/19680 | | (74) Agents: LAW, Glenn et al.; Foley & Lardner, Suite 500, 3000 K Street, N.W., Washington, DC 20007-5109 (US). | |
| (22) International Filing Date: 3 November 1997 (03.11.97) | | | |
| (30) Priority Data: 60/030,183 4 November 1996 (04.11.96) US | | (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). | |
| (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 60/030,183 (CON) Filed on 4 November 1996 (04.11.96) | | | |
| (71) Applicant (for all designated States except US): NATIONAL RECOVERY TECHNOLOGIES, INC. [US/US]; 566 Mainstream Drive, Nashville, TN 37228-1223 (US). | | Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. | |
| (72) Inventors; and (75) Inventors/Applicants (for US only): ROOS, Charles, E. [US/US]; 2507 Ridgewood Drive, Nashville, TN 37215 (US). SOMMER, Edward, J., Jr. [US/US]; 5329 General Forrest Court, Nashville, TN 37215 (US). PARRISH, Robert, H. [US/US]; 8029 Settlers Road, Nashville, TN 37221 (US). RUSSELL, James, R. [US/US]; 312 Appomattox Drive, Brentwood, TN 37027 (US). | | | |

(54) Title: TELEOPERATED ROBOTIC SORTING SYSTEM

(57) Abstract

A method and apparatus are disclosed for classifying materials (16) utilizing a computerized touch sensitive screen (9) or other computerized pointing device for operator identification and electronic marking of spatial coordinates of materials (16) to be extracted. An operator positioned at a computerized touch sensitive screen (9) views electronic images of the mixture of materials (16) to be sorted as they are conveyed past a sensor array (4) which transmits sequences of images of the mixture, either directly or through a computer to the touch sensitive display screen (9). The operator manually "touches" objects displayed on the screen (9) to be extracted from the mixture thereby registering the spatial coordinates of the objects within the computer. The computer then tracks the registered objects as they are conveyed and directs automated devices including mechanical means such as air jets (15), robotic arms (18), or other mechanical diverters to extract the registered objects.



PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
|--|--|
| Date of mailing (day/month/year) 19 June 1998 (19.06.98) | |
| International application No. PCT/US97/19680 | Applicant's or agent's file reference 76521/150 |
| International filing date (day/month/year) 03 November 1997 (03.11.97) | Priority date (day/month/year) 04 November 1996 (04.11.96) |
| Applicant ROOS, Charles, E. et al | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
04 June 1998 (04.06.98)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

S. De Michiel

Telephone No.: (41-22) 338.83.38

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/19680**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :BO7C 5/00

US CL :209/576

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 209/576, 577, 579, 578, 587, 589, 930, 942, 702, 705

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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| A | US 5,339,962 A (Sommer, Jr. et al.) 23 August 1994 | |
| A | US 5,423,431 A (Westin) 13 June 1995 | |
| A | US 5,520,290 A (Kumar et al.) 28 May 1996 | |
| A | US 5,141,110 A (Trischan et al.) 25 August 1992 | |

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

| | |
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| * Special categories of cited documents: | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" document defining the general state of the art which is not considered to be of particular relevance | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| "E" earlier document published on or after the international filing date | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family |
| "O" document referring to an oral disclosure, use, exhibition or other means | |
| "P" document published prior to the international filing date but later than the priority date claimed | |

Date of the actual completion of the international search

05 FEBRUARY 1998

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04 MAR 1998

Name and mailing address of the ISA/US
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Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

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PATENT COOPERATION TREATY

PCT

REC'D 10 JUL 1998


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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|--|
| Applicant's or agent's file reference 76521/150 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/US97/19680 | International filing date (day/month/year) 03 NOVEMBER 1997 | Priority date (day/month/year) 04 NOVEMBER 1996 |
| International Patent Classification (IPC) or national classification and IPC IPC(6): B07C 5/00 and US Cl.: 209/576 | | |
| Applicant NATIONAL RECOVERY TECHNOLOGIES, INC. | | |

| |
|--|
| 1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36. |
| 2. This REPORT consists of a total of <u>3</u> sheets. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>0</u> sheets. |
| 3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application |

| | |
|--|---|
| Date of submission of the demand 04 JUNE 1998 | Date of completion of this report 17 JUNE 1998 |
| Name and mailing address of the IPEA US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230 | Authorized officer  DAVID H BOLLINGER Telephone No. (703) 308-1113 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US97/19680

I. Basis of the report

1. This report has been drawn on the basis of *(Substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments):*

- ☒ the international application as originally filed.
- ☒ the description, pages 1-17 , as originally filed.
pages NONE , filed with the demand.
pages NONE , filed with the letter of _____
pages _____ , filed with the letter of _____
- ☒ the claims, Nos. 1-51 , as originally filed.
Nos. NONE , as amended under Article 19.
Nos. NONE , filed with the demand.
Nos. NONE , filed with the letter of _____
Nos. _____ , filed with the letter of _____
- ☒ the drawings, sheets/~~fig~~ 1-8 , as originally filed.
sheets/~~fig~~ NONE , filed with the demand.
sheets/~~fig~~ NONE , filed with the letter of _____
sheets/~~fig~~ _____ , filed with the letter of _____

2. The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE .
- ☒ the claims, Nos. NONE .
- ☒ the drawings, sheets/~~fig~~ NONE .

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the ~~Supplemental Box~~ Additional observations below (Rule 70.2(c)).

4. Additional observations, if necessary:

NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US97/19680

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. STATEMENT**

| | | |
|-------------------------------|--------------------|-----|
| • Novelty (N) | Claims <u>1-51</u> | YES |
| | Claims <u>NONE</u> | NO |
| Inventive Step (IS) | Claims <u>1-51</u> | YES |
| | Claims <u>NONE</u> | NO |
| Industrial Applicability (IA) | Claims <u>1-51</u> | YES |
| | Claims <u>NONE</u> | NO |

2. CITATIONS AND EXPLANATIONS

Claims 1 through 51 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the combination of steps in the method as recited in independent claim 1 or the combination of elements comprising the apparatus recited in independent claim 33.

----- NEW CITATIONS -----
NONE